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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/507,122	09/10/2004	Ken Fukuta	121068	8903

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EXAMINER

MAYES, MELVIN C

ART UNIT PAPER NUMBER

1734

DATE MAILED: 09/01/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/507,122

Applicant(s)

FUKUTA ET AL.

Examiner

Melvin Curtis Mayes

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-10 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>9/10/04, 6/9/05</u> . | 6) <input type="checkbox"/> Other: ____.  |

## DETAILED ACTION

### *Claim Rejections - 35 USC § 112*

(1)

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

(2)

Claims 1-10 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 claims “**at least one** reference cell” then claims “by use of the reference cells as reference points.” It is not clear whether the claim is limited to at least one reference cells or to more than one reference cell as claimed by “reference cells.”

Claim 5 claims “0.25 to 1.0 time with respect to an opening width of the other cell.” This is not clear.

### *Claim Rejections - 35 USC § 103*

(3)

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

(4)

Claims 1, 3, 4 and 7-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 2001-300922 in view of either Mochida et al. 4,740,408 or Hattori et al. 4,810,554.

JP '922 discloses a method of making a ceramic honeycomb structure comprising: extruding a ceramic honeycomb from a die (ferrule); picking up images of the end surface of the honeycomb body and processing the picked up image so as to detect the positions of the cells; adhering a sheet to the end surface; calculating cell pitch based on detected cell positions to machine holes in the sheet by either laser or needle; filling the cells with slurry; and firing. The diameter of the hole pierced in the sheet has an area of 30-70% of the area of respective cells.

The hole piercing process can be performed for the entire end surface or for two or more small blocks after dividing the cells into blocks.

Mochida et al. '408 teaches that in a ceramic honeycomb body for purifying combustion gas, the gas being treated tends to be concentrated at the central portion of the honeycomb body. Mochida et al. teach that fins are integrally formed with selected partition walls during extrusion in the central portion of the honeycomb body to eliminate the occurrence of accelerated deterioration of the central body portion which tends to hamper efficient purification of combustion gas (col. 3, lines 1-48, Figs 1-2).

Hattori et al. teach that a high strength ceramic honeycomb of high isostatic strength in all directions includes a number of quadrilateral cells arranged adjacent each other and triangular cells arranged in a zone in the proximity of the outer circumference of the honeycomb (col. 1, line 65 – col. 2, line 32, Fig. 5).

It would have been obvious to one of ordinary skill in the art to have modified the method of JP '922 for making a ceramic honeycomb structure by extruding the honeycomb body to have either: 1) fins formed with the cell walls in the central portion of the body or 2) quadrilateral cells adjacent each other and triangular cells in the proximity of the outer circumference of the honeycomb, as taught by: 1) Mochida et al., to eliminate the occurrence of accelerated deterioration of the central body portion which tends to hamper efficient purification of combustion gas or 2) Hattori et al., to provide a honeycomb of high isostatic strength in all directions.

By providing some of the cells with fins or some of the cells as quadrilateral while others are triangular, some of the cells are different in shape from other cells, as claimed, and by

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picking up images of the end surface so as to detect the positions of these cells to calculate cell pitch for machining holes, these differently shaped cells are obviously used as reference cells for providing reference points for drilling holes, as claimed.

(5)

Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over JP 2001-300922 in view of either Mochida et al. 4,740,408 or Hattori et al. 4,810,554 as applied to claim 1, and further in view of Bonzo 4,557,773.

Bonzo teaches that the covering for the end face of the ceramic honeycomb can be transparent, allowing the end face to be scanned through the covering by a suitable optical device to generate signals indicating the locations of cells (col. 4, lines 55-67).

It would have been obvious to one of ordinary skill in the art to have modified the method of the references as combined by adhering the sheet to the end surface of the honeycomb before picking up images of the end surface, as Bonzo teaches that if the end face covering is transparent, scanning of the end face can be performed through the covering. Picking up images of the end surface before or after adhering the sheet would have been obvious to one of ordinary skill in the art, depending on whether the sheet is transparent.

(6)

Claims 1 and 3-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 2001-300922 in view of Inoue et al. 6,159,431.

JP '922 discloses a method of making a ceramic honeycomb structure comprising: extruding a ceramic honeycomb from a die (ferrule); picking up images of the end surface of the honeycomb body and processing the picked up image so as to detect the positions of the cells;

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adhering a sheet to the end surface; calculating cell pitch based on detected cell positions to machine holes in the sheet by either laser or needle; filling the cells with slurry; and firing. The diameter of the hole pierced in the sheet has an area of 30-70% of the area of respective cells. The hole piercing process can be performed for the entire end surface or for two or more small blocks after dividing the cells into blocks.

Inoue et al. teach that a ceramic honeycomb body is provided with sufficient mechanical strength even in the thinning of the cell wall by forming a reinforcement portion on each corner part of an open-ended cell existing in a second zone outside a first zone. In the first zone, the cells are rectangular, while in the second zone, the cells are rectangular shape provided with each corner part thereof provided with a rounded or straight shaped fillet portion. Inoue et al. teach that for a an interconnected length (cell width) of 1.27 mm, round corner parts of radius of curvature of not less than 0.05 mm are excellent (col. 2-4, Figs. 1-2).

It would have been obvious to one of ordinary skill in the art to have modified the method of JP '922 for making a ceramic honeycomb structure by extruding the honeycomb body to have a first zone of rectangular cells and a second zone of rectangular cells with rounded corner as taught by Inoue et al., to provide sufficient mechanical strength by forming a reinforcement portion on each corner part in the second zone.

By providing some of the cells with rounded corner, some of the cells are different in shape from other cells, as claimed, and by picking up images of the end surface so as to detect the positions of these cells to calculate cell pitch for machining holes, these differently shaped cells are obviously used as reference cells for providing reference points for drilling holes, as claimed.

By providing some of the cells with round corner parts of radius of curvature of not less than 0.05 mm for cell width of 1.27 mm, Inoue et al. disclose or suggest a curvature radius as claimed in Claim 5 and four adjacent cells having facing corner portions of curved shapes, as claimed in Claim 6.

(7)

Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over JP 2001-300922 in view of Inoue et al. 6,159,431 as applied to claim 1, and further in view of Bonzo 4,557,773.

Bonzo teaches that the covering for the end face of the ceramic honeycomb can be transparent, allowing the end face to be scanned through the covering by a suitable optical device to generate signals indicating the locations of cells (col. 4, lines 55-67).

It would have been obvious to one of ordinary skill in the art to have modified the method of the references as combined by adhering the sheet to the end surface of the honeycomb before picking up images of the end surface, as Bonzo teaches that if the end face covering is transparent, scanning of the end face can be performed through the covering. Picking up images of the end surface before or after adhering the sheet would have been obvious to one of ordinary skill in the art, depending on whether the sheet is transparent.



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*Allowable Subject Matter*

(8)

EP 0 753 490 cited on Supplementary European Search Report, filed with IDS of 6/9/05, does not disclose drilling holes in sheets attached to honeycomb by the use of reference cells as reference points.

*Conclusion*

(9)

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

(10)


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Melvin Curtis Mayes whose telephone number is 571-272-1234.

The examiner can normally be reached on Mon-Fri 7:30 AM - 4:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chris Fiorilla can be reached on 571-272-1187. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
Melvin Curtis Mayes  
Primary Examiner  
Art Unit 1734

MCM  
August 30, 2005